b. linearizing the targeting vector within the homologous sequences to form recombinogenic ends;

c. introducing the linearized targeting vector into a yeast cell containing DNA comprising the defined segment of DNA;

d. performing mutagenesis of the defined segment of DNA; and

e. selecting for a recombinant product containing the defined segment of DNA.

15. The method of claim 14, wherein said bacterial replication origin is selected from the group consisting of P1 replicon and F factor origin of replication.

16. The method of claim 14, wherein the defined segment of DNA is mutated by yeast genetics.

17. The method of claim 14, wherein the defined segment of DNA is mutated in bacteria.

18. The method of claim 15, further comprising the step of using the defined segment of DNA to create knock-in or knock-out strains of mammals.

19. The method of claim 15, further comprising the step of using the defined segment of DNA to create transgenic embryos.

20. The method of claim 14, further comprising manipulating the recombinant product by